HFC Optical Receiver

MX862R-2

USER MANUAL

Provided by: Mega Hertz 800-883-8839 info@go2mhz.com www.go2mhz.com

CONTENT

1.0 PRODUCT SUMMARY 3

2.0 INSTALLATION 3

2.1 Unpacking 3
2.2 Receiver Mounting and Power Connection 3
2.3 RF connection 3
2.4 Optic connection 4

3.0 RECEIVER CONTROLS, INDICATORS, AND ALARMS 5

3.1 The operation of the panel 5

4.0 ANNOUNCEMENTS 7

5.0 ERROR AND REMEDY 8

6.0 SPECIFICATIONS 8-9

7.0 GUARANTEE AND REPAIR ITEMS 10

1.0 PRODUCT SUMMARY

The MX862R-2 CATV Fiber Optic receivers are designed high reliability with optical AGC, high level RF output, ease of use, easy to read LED indicators, and suitable for high-level applications.

2.0 INSTALLATION

2.1 Unpacking

Inspect the shipping boxes for any obvious damages.
Unpack the unit from all packaging boxes.
Inspect the appearance of the unit for any shipping damages.
Document and inform the shipping company and your local representative, as seen in section 1.2, of the damages.
Save the shipping boxes and their inserts for any future reshipment for upgrade or repair.

2.2 Receiver Mounting and Power Connection

Place the unit into a 19-inch wide rack or cabinet. Make sure to leave a 1.75-inch (about 4.5cm) space above and below the unit.

Climate 0°C~50°C （ 32°F~122°F ） temperature range. We recommend 25°C（77°F）environment temperatures.

Humidity not higher than 95% in a dust free environment.

Equipment powered by AC or optional DC voltage.

Request of power supply:

AC input	94-245VAC, 50-60Hz
DC input	36-60VDC, floating
Power consumption	Maximum 50W

The DC power supply of the equipment must be the SELV supply stipulated as CAN/CSA C22.2 No.950-95 standard.

The unit should be grounded, grounding resistance＜4Ω. According to international standards.

Before connecting circuit, please use spec (#20AWG and larger) electrical wire to connect the grounding screw on the bottom and the grounding frame. When use DC input power supply, the equipment chassis must be grounded.

2.3 RF connection

Connect the RF cable & the connector on RX rear panel. RF connector is F type plug. The resistance is 75Ω.

2.4 Optic connection

1. For your protection & safety, all the fiber optic connectors need protective covers during transportation.

In order to ensure the insertion loss & return loss, the end-face of the fiber optic connector is polished. Connector should be clean. Dust will affect the transmission quality. When not using the fiber optic connector, please place the protection cover over the connector.

Clean all fiber patch cords before connecting to the receiver.

Cleaning Guidelines:

Fiber Patch cord connectors

- Remove the fiber connectors dust cap and wipe the fiber connector tip with a dry lint-free cloth (such as Kim wipes). Inspect for scratches or debris on connector surface by using a microscope (ie.100x or 200x).

Fiber Bulkhead connectors

- Compressed air may be used to clean fiber bulkhead connectors. Use compressed air with at least the following specifications:
  - Non-residue, inert gas for precision dust removal
  - Ultra-filtered to < 0.2 microns
  - Recommended for optical systems
  - Using compressed air as listed above, remove the bulkhead dust cover and hold the can of compressed air about 6 inches from the connector. After spraying a few short bursts into the bulkhead, the connector should be clean and ready for connection.
- If compressed air is not available, the receiver fiber bulkhead connector may be cleaned by a 2.5 mm cotton swap or connector plate may be removed to clean the internal fiber patch cords.
- Slowly remove the optical connector plate from the rear panel and disconnect each fiber connector from the bulkhead mounted on the plate.
- Clean each fiber connector according to section A of the fiber cleaning guidelines.

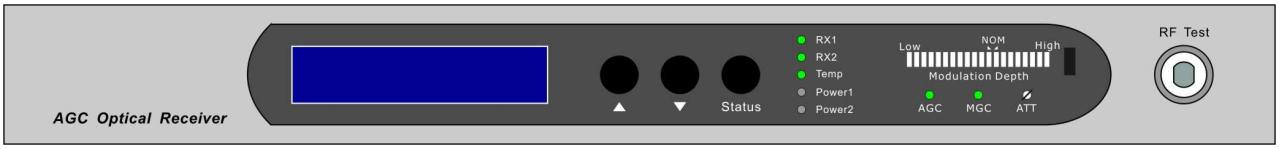
2. Connect the optic patch cord with output 1 port on real panel.

3.0

CAUTION: Use caution when handling fibers.
Do not exceed fiber manufacturers pulling tension or bend radius specifications when removing fiber bulkhead connector plate.

Receiver Controls, Indicators, and Alarms

This section of the manual will give an overview of the available menus in the MX862R-2 series optic receiver and their descriptions. All instructions in Section 2.0 refer to the representation of the front panel shown in the diagram below. The user scrolls through the menus using the push bottoms found on the front panel, these are located just to the right of the LCD screen.



3.1 The operation of the panel

3.1.1 Open menu

A. Plug in 110V power supply

B. Turn on power switch in the rear panel

Unit enters the self-check mode, after validating, it enters working status, and will display "**Forward optic receiver**".

RX1	Status lamp Red
RX2	Status lamp Red
TEMP	Status lamp Green
POWER1	Status lamp Green
AGC	Status lamp Green

If the equipment operates with dual power supply, status indicator of "POWER2" is in green.
If the status is changed from "AGC" to "MGC", its status indicator turns to green.

3.1.2 Start-up main menu

Press "STATUS" button will display below menu in sequence.

Menu # 1 - S/N
Read-only menu, indicates the serial-number

Menu # 2 - INPUT
Read-only menu, indicates the input optical power

Menu # 3 - UNIT TEMP
Read-only menu, indicates the system temperature

Menu # 4 - RF LVL
Read-only menu, indicates the RF input level

Menu # 5 - RF MODE
Current RF mode, display AGC/Manual
If it appears RF Mode = AGC, while it was in the state of AGC
If it appears RF Mode = Manual, while it was in the state of MGC

Menu # 6 - +5V Reads
Read-only menu, display the voltage +5V

Menu # 7 - -5V Reads
Read-only menu, display the voltage -5V

Menu # 8 - +24V Reads
Read-only menu, display the voltage +24V

Menu # 9 - IP
Adjustable list, display the IP address of SNMP (optional)

Menu # 10 - Subnet
Adjustable list, display the address of net mask (optional)

3.1.3 Menu assistant manual

Press **STATUS** key for 1 or 2 seconds to amend the address menu that you wish to change, press **STATUS** for 1 or 2 seconds to choose the amend location, push **STATUS** currently value +1, press **STATUS** to the end of the address to enter into save and exit.

For example, amend IP setup menu, IP: 192.168.000.015; if changing 5 to 6, use **STATUS** key to choose the place of 5, then press **STATUS** key to change 5 to 6, then press **STATUS** to save amended IP: 192.168.000.016

The default control mode is AGC. When the OMI modulation menu displays RF Mode=AGC, press "▲" key and the menu will display RF Mode=AGC (AGC flicker). Then press "▼", the menu will display RF Mode=Manual and the change from AGC to MGC has been completed. If you want to change the current control mode back into AGC, press "▲" key when the current menu displays RF Mode=Manual, then the menu will display RF Mode=AGC (AGC flicker). Then press "▼", the change from Manual to AGC will be complete and the menu will display RF Mode=AGC.

4.0 ANNOUNCEMENTS

A. Received power: the received power should be between -12~+2dBm (1- to 0 is optimal), received power too low also may continue to operate, but CNR will rapidly deteriorate. Received power too high will cause CTB, CSO deterioration. When received power>3dBm(2mW) may damage optical receive module.

B. RF output level: optical receiver's RF output level related to receive power and optical receiver's RF drive level (that is modulation coefficient). Received power to increase or reduce 1 dB, optical receiver of the RF output level would increase or decrease 2 dB (1:2). Optical receiver RF drive level to increase or reduce 1 dB, optical receiver RF output level would increase or decrease 1 dB (1:1). When received power is –2dBm, RF output level is 35dBmV±1dB. RF working output level can modulate through ATT1. *(Note, for high output models, there is an additional RF level control <red know> on top of receiver <top of chassis> that should be used to adjust the RF output level).

C. CTB and CSO: RF output level too high will cause CSO and CTB index to experience deterioration. Output level increase 1dB, CTB deteriorates 2dB, CSO deteriorates 1.5dB.

D. When properly adjusted, the optical receiver RF output level should ensure the distortion index CTB≤-65dB, CSO≤-60dB.

5.0 ERROR AND REMEDY

1. No RF output

   a) Check the power supply of the unit to determine whether it is normal.

   b) Insert optical connector, if the RX-Low is showing a red light, or no optical power, you should use an optical power meter to measure the optical power of the optical cable output connector. If optical power is normal, it may not be seated well into the optical connector, (this unit adopts SC/APC), or optical receiver module may be damaged, If damage is suspected, you should contact Maxcom and return for factory maintenance.

   c) Insert optical connector, if the RX-Low is still showing a green light, and optical power is within normal range, you may check FL, EQ, ATT1, or red RF adjustment knob on top of the units chassis .

2. RF output level too low(<20dBmV)

   a) Check received optical power to determine if too low. (<-12dBm)

   b) If optical power is normal you may check all connections. If all are normal, power double module BGD702 may be damaged. When BGD702 working in high current (435mA) such as the units installation of grounding is poor, electrostatic may lead to damaged module (may need to be returned for factory maintenance)

   c) Check FL, EQ, ATT1, or red RF adjustment knob on top of the unit's chassis .

3. RF output level too high causing the distortion index to be deteriorated

   a) Check received optical power to determine if too high, such as >3dBm you should install an optical attenuator.

   b) Check the head-end optical receiver's RF drive level whether too high. Optical receiver's RF drive level determines the modulation, it also determines the system index (CNR, CTB, CSO). Designing should meet optical receiver manufacture requirement.

   c) Manufacture presented RF drive level Si when in full channel (NTSC/77ch, PAL-D/59ch). When system transfer N channel practice, RF drive level SiN should amend as follows:
   SiN=Si+10Lg(77/N) (NTSC/77ch)
   SiN=Si+10Lg(59/N) (PAL-D/59ch)

   d) If received optical power and optical receiver RF drive level are all normal, optical receiver RF output power can modulated through ATT1, or red RF adjustment knob on top of the units chassis

6.0 Specifications

Technical index

Performance			
Optic feature	wavelength	(nm)	1310 / 1550
	Input power	(dBm)	-5~+3
	Working mode		Optical AGC
	Return wave loss	(dB)	≥55
	Optical connector		SC/APC
RF feature	Bandwidth	(MHz)	45~862
	Output level	(dBmV)	53
	Flatness	(dB)	≤±0.5
	Output level adjustable	(dB)	0~20(MGC)
	Reflect loss	(dB)	≥16(750MHz)
	Output impedance	(Ω)	75
Link feature	Test channel		PAL-D/60ch
	CNR	(dB)	≥52(10Km fiber, -1dBm receive)
	CTB	(dB)	≤-70
	CSO	(dB)	≤-63
General feature	Network management interface option		RJ45,RS232(support IE and SNMP)
	Power supply	(V)	110VAC
	Power Consume	(W)	≤50(single power work)
	Work temp.	(℃)	-5~65(Machine temp. Control automatically)
	Storage temp.	(℃)	-40~85
	Relative humidity	(%)	5~95
	Size (W)x(D)x(H)		19×10×1.75 (") 483×254×44 (mm)

7.0 GUARANTEE AND REPAIR ITEMS

1. Each unit is packaged with a Products Qualification label, with the series number providing one-year's guarantee.
2. In case of Red indicator LED blinking (Alarm). Please return for repair. User should not open the top cover for repair, or warranty will be voided.

Provided by: Mega Hertz 800-883-8839 info@go2mhz.com www.go2mhz.com